REMARKS

This Application has been carefully reviewed in light of the Office Action mailed March 23, 2005. At the time of the Office Action, Claims 1-27 were pending in this Application. Claims 28-30 were previously cancelled due to an election/restriction requirement. Claims 1-27 were rejected. Claims 1, 13 and 25 have been amended to further define various features of Applicant's invention. Claims 2, 26 and 27 have been cancelled without prejudice or disclaimer. Applicant respectfully requests reconsideration and favorable action in this case.

Specification Objections

The Examiner has objected to the Specification due to informalities on Page 12 and 13. Applicant has amended the Specification accordingly to overcome these objections and requests withdrawal of all objections to the Specification.

Rejections under 35 U.S.C. §103

Claims 1-27 were rejected under 35 U.S.C. §103(a) as being unpatentable over the article "Economic Analysis of Drilling Plans and Contractors by Use of a Drilling Systems Approach" by W.W. Reynolds ("Reynolds") in view of U.S. Patent No. 4,794,534 issued to Keith K. Millheim ("Millheim"). Applicant respectfully traverses and submits the cited art combinations, even if proper, which Applicant does not concede, does not render the claimed embodiment of the invention obvious.

In order to establish a prima facie case of obviousness, the references cited by the Examiner must disclose all claimed limitations. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974). Furthermore, according to §2143 of the Manual of Patent Examining Procedure, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to

combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991).

Neither Reynolds nor Millheim show or teach any method for enhanced decision making as defined by Applicant's amended claims. Reynolds teaches using an "engineering simulator for drilling (ESD)" to drill a postulated well plan to determine estimated time and cost for each well plan. Reynolds expressly states "The simulator divides cost estimating into two areas: (1) resource usage and (2) time information. Reynolds expressly teaches using ESD to determine respective time and cost associated with Well Plan 1 and Well Plan 2. The resulting time and costs estimates may then be manually compared and the "best choice" in terms of time and cost may be manually selected. Reynolds also teaches using risk-weighted times and cost for both well plans. See Well Planning—Example 1.

Reynolds does not show or teach various steps of Applicant's invention associated with **"iterative drilling simulation"** and **"optimization"** including, but not limited to, as defined in amended Claim 1.

> "... generating a first economic evaluation factor ... using an iterative drilling simulation ... based on a drilling simulation model having at least one of the following formation characteristics selected from the group consisting of lithology, rock strength, shale plasticity and porosity and a drilling mechanics parameter;
>
> determining whether the first economic factor achieves a desired optimization;
>
> varying the drilling mechanics parameter ... such that the iterative drilling simulation generates a second economic evaluation factor;

determining whether the second economic evaluation factor achieves the desired optimization;

selecting the drilling mechanics parameter from the group consisting of bit type, bit diameter, bit cutting structure 3D (three dimensional) model, bit work rating, bit junk slot area, bit total flow area (TFA), bit pressure drop, impact force, jet velocity and drill bit costs; and

continuing the iterative drilling drilling simulation ... until the desired optimization is achieved."

Millheim teaches a method and apparatus to provide a wide variety of drilling data on a real time basis into a data base associated with a programmable digital computer. The drilling data may be used to monitor drilling activities and may be used to simulate future drilling actions. However, Millheim does not show or teach any method or apparatus using iterative drilling simulation and optimization as defined in amended Claim 1. Applicant respectfully requests withdrawal of the rejection and allowance of Claim 1 as amended.

Claims 3-12 are dependent directly or indirectly from Claim 1. Since Claim 1 as amended is now deemed allowable, Claims 3-12 are allowable. Applicant respectfully requests withdrawal of all rejections and allowance of Claim 3-12 as amended.

Applicant respectfully submits that neither Reynolds nor Millheim show or teach a program product for enhanced decision making to recommend a drilling system as defined in amended Claim 13. Reynolds does not show or teach various features of Applicant's invention including, but not limited to:

"A program product for enhanced decision making to recommend a drilling rig system ...

computer instructions encoded in the computer-usable medium ...

generating a first economic evaluation factor for the drilling rig system by using an iterative-simulation ...

selecting the drilling mechanics parameter from the group consisting of bit type, bit diameter, bit cutting structure 3D (three dimensional) model, bit work rating, bit junk slot area, bit total flow area (TFA), bit pressure drop, impact force, jet velocity and drill bit costs;

...

generating at least one recommendation including a list of drilling equipment."

As previously noted with respect to amended Claim 1, Millheim teaches a method and apparatus to provide a wide variety of drilling data on a real time basis into a data base associated with a programmable digital computer. The drilling data may be used to monitor drilling activities and may be used to simulate future drilling actions. Millheim does not show or teach a program product using iterative drilling simulation and providing recommendations as defined in Amended Claim 13.

Applicant respectfully requests withdrawal of all rejections and allowance of Claim 13 as amended.

Claims 15-24 are dependent directly or indirectly from Claim 13. Applicant further notes that neither Reynolds nor Millheim show or teach various features of Applicant's invention which are defined in Claims 15-24. For example, Claim 15 calls for "modifying the iterative drilling simulation to take in to account drill bit enhancements." Neither Reynolds nor Millheim teach consideration of drill bit enhancements.

Claim 19 further defines Applicant's program product such as "... the iterative drilling simulation generates a third economic evaluation factor for an additional primary recommendation."

Applicant's respectfully request withdrawal of all rejections and allowance of Claims 15-24.

Claim 25 as amended calls for various steps of Applicant's invention which are neither shown nor taught by Reynolds or Millheim. For example, Claim 25 as amended calls for:

"... generating a first economic evaluation factor for the drilling system by using an iterative drilling simulation ...

... varying the drilling mechanics parameter of the drill bit such that the iterative drilling simulation generates a second economic evaluation factor ...

generating a preliminary recommendation based on the economic evaluation factor that achieved the desired optimization ...

modifying the iterative drilling simulation to take into account drill bit enhancements ...

selecting at least one of the drilling mechanics parameter of the drill bit from a group consisting of a bit type, bit diameter, bit cutting structure 3D (three dimensional) model, bit work rating, bit junk slot area, bit total flow area (TFA), bit pressure drop, impact force, jet velocity and drill bit costs."

Applicant requests withdrawal of all rejections and allowance of Claim 25 as amended. Claim 31 is dependent from Claim 25. Claim 31 also calls for "... selecting the log data for use in the iterative drilling simulation from the group consisting of well logs, mud logs, core data and fit records." As previously noted, neither Reynolds nor Millheim show or teach various steps of Applicant's invention associated with iterative drilling simulation. Applicant's respect withdrawal of all rejections and allowance of Claims 25 and 31 as amended.

CONCLUSION

Applicant has now made an earnest effort to place this case in condition for allowance in light of the amendments and remarks set forth above. Applicant respectfully requests reconsideration of Claims 1, 3-13, 15-25 and 31 as amended.

Applicant believes there are no fees due at this time, however, the Commissioner is hereby authorized to charge any fees necessary or credit any overpayment to Deposit Account No. 50-2148 of Baker Botts L.L.P.

If there are any matters concerning this Application that may be cleared up in a telephone conversation, please contact Applicant's attorney at 512.322.2599.

Respectfully submitted,
BAKER BOTTS L.L.P.
Attorney for Applicant

Thomas R. Felger
Reg. No. 28,842

SEND CORRESPONDENCE TO:
BAKER BOTTS L.L.P.
CUSTOMER ACCOUNT NO. 31625
512.322.2599
512.322.8305 (fax)

Date: June 17, 2005